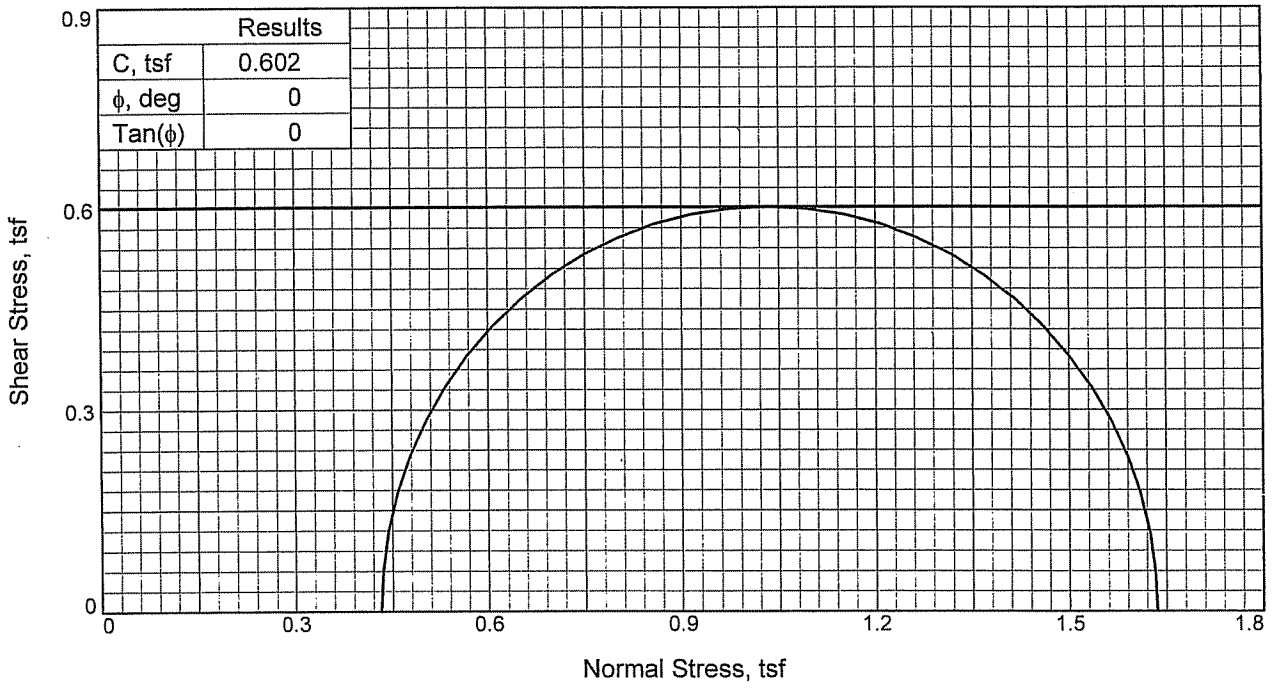
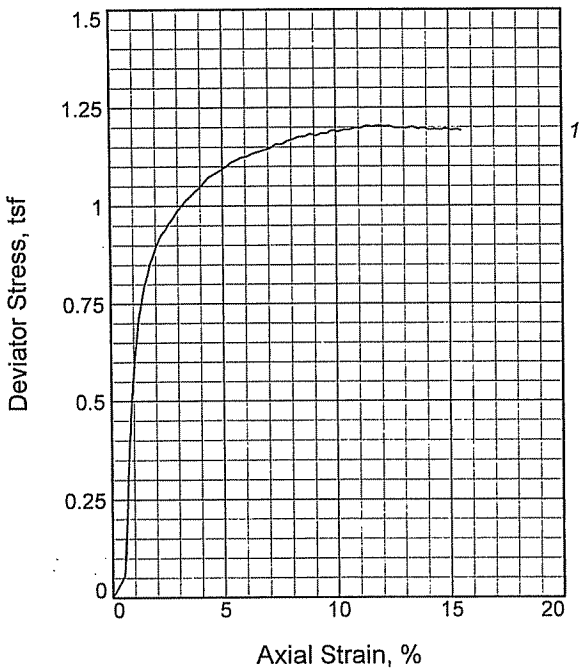
	5	8-10	Reddish-brown LEAN CLAY	CL	31.9	95.8	45	18	27	99.8	1.01	12	9	Bulge
	6	10-12	Reddish-brown SANDY SILTY CLAY	CL-ML	25.4	97.5								
	7	12-14	Reddish-brown and gray FAT CLAY	CH	27.8	97.9								
	8	14-16	Reddish-brown and gray FAT CLAY	CH	21.0	105.9								
	9	16-18	Reddish-brown and gray LEAN CLAY with SAND	CL	15.8	113.2								
	10	18-20	Reddish-brown and gray LEAN CLAY with SAND	CL	26.5	97.4								
08-94			**El. 9.25, E=3185568 N=13646170**											
	1	0-2	Gray and tan SANDY LEAN CLAY	CL	11.3	106.3								
	2	2-4	Gray and tan FAT CLAY	CH	24.9	100.1								
	3	4-6	Tan and gray FAT CLAY	CH	24.5	99.7	60	21	39	90.7	1.20	11.4	6	60 degree
	4	6-8	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	29.6	96.0								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	28.9	95.4								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	22.0	107.1	50	20	30	97.8	1.13	11.2	11	60 degree
	7	12-14	Reddish-brown and gray SANDY SILTY CLAY	CL-ML	23.8	99.5					0.84	3.4		Vertical shear
	8	14-16	Reddish-brown gray FAT CLAY; calcareous nodules	CH	27.5	97.5								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	25.4	98.4	67	21	46	98.0	2.28	6.7	15	Slickensided
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.0	98.0								
08-95			**El. 11.00, E=3184767 N=13646549**											
	1	0-2	Gray and tan SANDY LEAN CLAY	CL	9.9	108.8								
	2	2-4	Tan and gray SANDY LEAN CLAY	CL	20.9	105.1								
	3	4-6	Tan and gray FAT CLAY; ferrous nodules	CH	23.5	103.0	61	21	40		2.01	11.2	6	Bulge
	4	6-8	Reddish-brown and gray FAT CLAY; calcareous	CH	24.2	101.6					1.72	11.2		60 degree
	5	8-10	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	28.1	95.9								
	6	10-12	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.5	94.7								
	7	12-14	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	30.1	95.6								
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	27.6	97.3								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.2	99.2								
	10	18-20	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	24.1	100.5								
08-96			**El. 11.50, E=3184441 N=13647279**											
	1	0-2	Gray SANDY LEAN CLAY	CL	17.8	106.6								
	2	2-4	Gray and tan FAT CLAY	CH	20.1	103.5								
	3	4-6	Reddish-brown and gray FAT CLAY	CH	32.9	89.8	64	21	43	93.1	0.85	6.2	6	60 degree
	4	6-8	Reddish-brown and gray FAT CLAY	CH	27.6	94.3								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	30.6	90.8								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	25.7	95.8	66	21	45	98.8	1.54	2.6		Slickensided
	7	12-14	Reddish-brown and gray FAT CLAY	CH	24.9	102.6								
	8	14-16	Reddish-brown LEAN CLAY with SAND	CL	24.1	97.7								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	26.0	97.9								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	26.3	98.0								
08-97			**El. 11.25, E=3185190 N=13647332**											
	1	0-2	Gray SANDY LEAN CLAY	CL	15.8	109.4								
	2	2-4	Gray FAT CLAY with SAND	CH	21.1	105.3								
	3	4-6	Tan and gray FAT CLAY; ferrous and calcareous nodules	CH	21.2	108.2								
	4	6-8	Reddish-brown and gray FAT CLAY; ferrous nodules	CH	30.4	89.6								
	5	8-10	Reddish-brown and gray FAT CLAY	CH	40.9	86.4	66	21	45	98.0	0.44	9.5	9	60 degree
	6	10-12	Reddish-brown and gray SILTY CLAY with SAND	CL-ML	35.6									
	7	12-14	Reddish-brown and gray SILTY CLAY with SAND	CL-ML	27.0	95.8					0.58	5.8		Vertical shear
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	25.4	99.0								
	9	16-18	Reddish-brown and gray FAT CLAY	CH	25.1	98.8								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	28.9	98.7								
08-98			**El. 11.00, E=3184452 N=13647824**											
	1	0-2	Gray SANDY LEAN CLAY	CL	13.2	105.9								
	2	2-4	Tan and gray FAT CLAY	CH	19.8	98.9								
	3	4-6	Tan and gray FAT CLAY	CH	17.1	109.6								
	4	6-8	Reddish-brown and gray FAT CLAY	CH	29.1	93.3	67	21	46	98.3	1.22	6.1		Slickensided
	5	8-10	Reddish-brown and gray FAT CLAY	CH	32.4	88.6								
	6	10-12	Reddish-brown and gray FAT CLAY	CH	24.5	99.6	62	20	42	95.2	1.75	5.1	11	Slickensided
	7	12-14	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	37.8	87.0								
	8	14-16	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	26.0	98.0								
	9	16-18	Reddish-brown and gray FAT CLAY; calcareous nodules	CH	24.4	102.5								
	10	18-20	Reddish-brown and gray FAT CLAY	CH	27.6	96.5								
08-99														





Sample No.		1
Initial	Water Content, %	24.5
	Dry Density, pcf	99.6
	Saturation, %	95.8
	Void Ratio	0.6916
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content, %	24.2
	Dry Density, pcf	99.6
	Saturation, %	94.6
	Void Ratio	0.6916
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.43
Fail. Stress, tsf		1.20
Ult. Stress, tsf		
σ_1 Failure, tsf		1.64
σ_3 Failure, tsf		0.43

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Tan and gray FAT CLAY

LL= 60 **PL=** 21 **PI=** 39

Assumed Specific Gravity= 2.70

Remarks:

Test method: ASTM D 2850

Pocket pen; tsf: 1.50

Failure type: 60 degree

Client: United States Army Corps of Engineers

Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079

Source of Sample: 08-94 **Depth:** 4-6

Sample Number: 3

Proj. No.: 08.18.921 **Date Sampled:** 8/15/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

8/19/2008
1:56 PM

Date: 8/15/08
Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921
Location: 08-94
Depth: 4-6 **Sample Number:** 3
Description: Tan and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 1.50
Failure type: 60 degree
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**60 **PL=**21 **PI=**39
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	151.920	116.830
Moisture content: Dry soil+tare, gms.	128.190	100.090
Moisture content: Tare, gms.	31.450	31.020
Moisture, %	24.5	24.2
Moist specimen weight, gms.	1246.3	
Diameter, in.	2.85	
Area, in.^{2}	6.38	
Height, in.	6.00	
Wet Density, pcf	124.1	
Dry density, pcf	99.6	
Void ratio	0.6916	
Saturation, %	95.8	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 6.00 psi (0.432 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 1.204 tsf **at reading no.** 77

Test Readings for Specimen No. 1

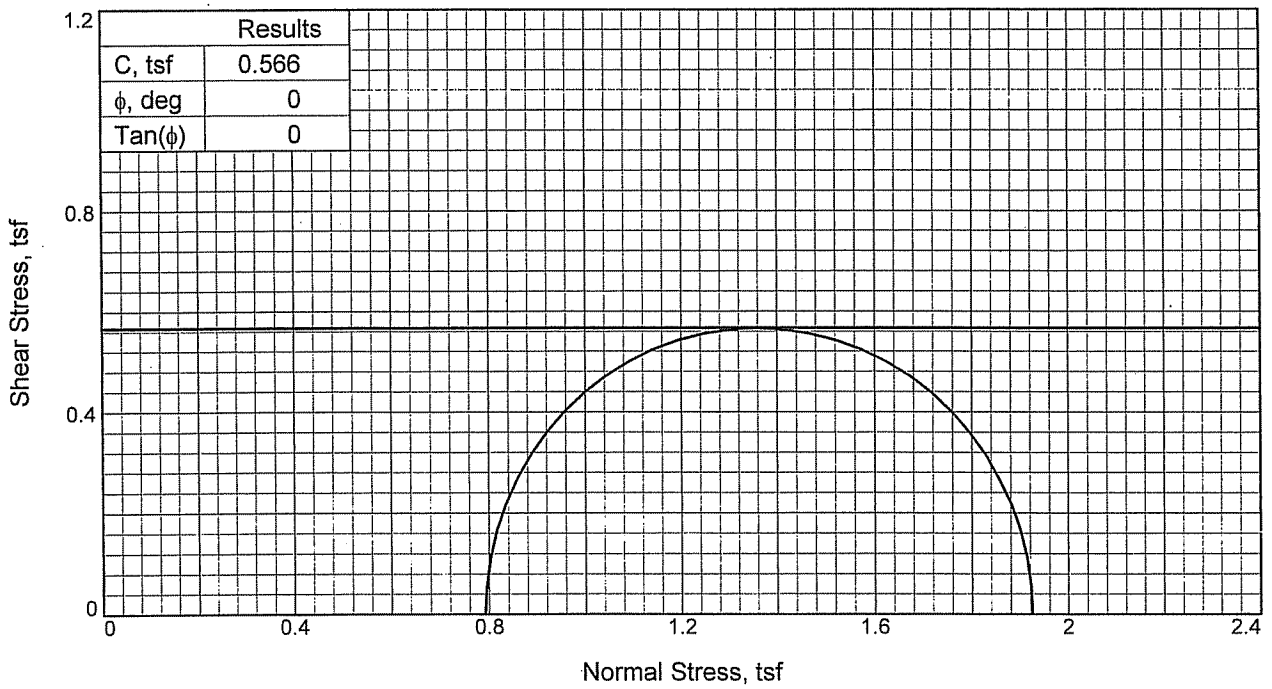
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0000	0.000	0.0	0.0	0.000	0.432	0.432	1.00	0.432	0.000
1	0.0310	4.800	4.8	0.5	0.054	0.432	0.486	1.12	0.459	0.027
2	0.0326	6.506	6.5	0.5	0.073	0.432	0.505	1.17	0.469	0.037
3	0.0339	9.086	9.1	0.6	0.102	0.432	0.534	1.24	0.483	0.051
4	0.0358	11.696	11.7	0.6	0.131	0.432	0.563	1.30	0.498	0.066
5	0.0365	13.557	13.6	0.6	0.152	0.432	0.584	1.35	0.508	0.076
6	0.0367	8.455	8.5	0.6	0.095	0.432	0.527	1.22	0.479	0.047
7	0.0383	13.860	13.9	0.6	0.155	0.432	0.587	1.36	0.510	0.078
8	0.0395	17.493	17.5	0.7	0.196	0.432	0.628	1.45	0.530	0.098
9	0.0415	21.212	21.2	0.7	0.238	0.432	0.670	1.55	0.551	0.119
10	0.0428	24.304	24.3	0.7	0.272	0.432	0.704	1.63	0.568	0.136
11	0.0440	27.315	27.3	0.7	0.306	0.432	0.738	1.71	0.585	0.153
12	0.0461	30.337	30.3	0.8	0.340	0.432	0.772	1.79	0.602	0.170
13	0.0474	32.631	32.6	0.8	0.365	0.432	0.797	1.85	0.615	0.183
14	0.0486	35.465	35.5	0.8	0.397	0.432	0.829	1.92	0.631	0.199
15	0.0507	37.777	37.8	0.8	0.423	0.432	0.855	1.98	0.643	0.211
16	0.0520	40.247	40.2	0.9	0.450	0.432	0.882	2.04	0.657	0.225
17	0.0532	42.571	42.6	0.9	0.476	0.432	0.908	2.10	0.670	0.238
18	0.0553	45.060	45.1	0.9	0.504	0.432	0.936	2.17	0.684	0.252
19	0.0565	46.998	47.0	0.9	0.525	0.432	0.957	2.22	0.695	0.263
20	0.0578	48.601	48.6	1.0	0.543	0.432	0.975	2.26	0.704	0.272
21	0.0599	50.215	50.2	1.0	0.561	0.432	0.993	2.30	0.713	0.281
22	0.0612	51.943	51.9	1.0	0.580	0.432	1.012	2.34	0.722	0.290
23	0.0624	53.811	53.8	1.0	0.601	0.432	1.033	2.39	0.733	0.301
24	0.0645	55.628	55.6	1.1	0.621	0.432	1.053	2.44	0.743	0.311
25	0.0658	56.970	57.0	1.1	0.636	0.432	1.068	2.47	0.750	0.318
26	0.0691	59.111	59.1	1.2	0.659	0.432	1.091	2.53	0.762	0.330
27	0.0716	61.700	61.7	1.2	0.688	0.432	1.120	2.59	0.776	0.344
28	0.0749	64.416	64.4	1.2	0.718	0.432	1.150	2.66	0.791	0.359
29	0.0795	66.482	66.5	1.3	0.740	0.432	1.172	2.71	0.802	0.370
30	0.0829	68.443	68.4	1.4	0.762	0.432	1.194	2.76	0.813	0.381
31	0.0854	69.727	69.7	1.4	0.776	0.432	1.208	2.80	0.820	0.388
32	0.0900	71.560	71.6	1.5	0.796	0.432	1.228	2.84	0.830	0.398
33	0.0997	74.781	74.8	1.7	0.830	0.432	1.262	2.92	0.847	0.415
34	0.1055	76.869	76.9	1.8	0.852	0.432	1.284	2.97	0.858	0.426
35	0.1119	78.472	78.5	1.9	0.869	0.432	1.301	3.01	0.867	0.435
36	0.1234	81.464	81.5	2.1	0.901	0.432	1.333	3.08	0.882	0.450
37	0.1357	83.951	84.0	2.3	0.926	0.432	1.358	3.14	0.895	0.463
38	0.1479	85.336	85.3	2.5	0.939	0.432	1.371	3.17	0.902	0.470
39	0.1543	86.644	86.6	2.6	0.953	0.432	1.385	3.21	0.908	0.476
40	0.1665	88.123	88.1	2.8	0.967	0.432	1.399	3.24	0.915	0.483
41	0.1780	89.944	89.9	3.0	0.985	0.432	1.417	3.28	0.925	0.493
42	0.1903	91.325	91.3	3.2	0.998	0.432	1.430	3.31	0.931	0.499
43	0.2026	93.019	93.0	3.4	1.014	0.432	1.446	3.35	0.939	0.507
44	0.2148	94.160	94.2	3.6	1.025	0.432	1.457	3.37	0.944	0.512
45	0.2270	95.400	95.4	3.8	1.036	0.432	1.468	3.40	0.950	0.518
46	0.2385	96.441	96.4	4.0	1.045	0.432	1.477	3.42	0.955	0.523

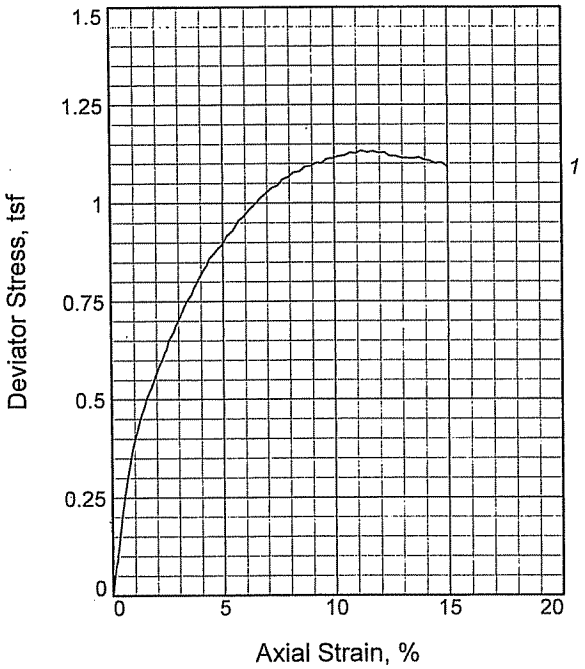
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.2508	97.915	97.9	4.2	1.059	0.432	1.491	3.45	0.961	0.529
48	0.2631	99.372	99.4	4.4	1.072	0.432	1.504	3.48	0.968	0.536
49	0.2747	100.221	100.2	4.6	1.079	0.432	1.511	3.50	0.972	0.540
50	0.2870	101.025	101.0	4.8	1.086	0.432	1.518	3.51	0.975	0.543
51	0.2992	101.833	101.8	5.0	1.092	0.432	1.524	3.53	0.978	0.546
52	0.3114	102.881	102.9	5.2	1.101	0.432	1.533	3.55	0.982	0.550
53	0.3236	104.035	104.0	5.4	1.111	0.432	1.543	3.57	0.987	0.555
54	0.3359	104.705	104.7	5.6	1.116	0.432	1.548	3.58	0.990	0.558
55	0.3506	105.723	105.7	5.8	1.123	0.432	1.555	3.60	0.994	0.562
56	0.3661	106.223	106.2	6.1	1.126	0.432	1.558	3.61	0.995	0.563
57	0.3808	107.240	107.2	6.3	1.134	0.432	1.566	3.62	0.999	0.567
58	0.3962	107.869	107.9	6.6	1.137	0.432	1.569	3.63	1.001	0.569
59	0.4110	108.628	108.6	6.9	1.142	0.432	1.574	3.64	1.003	0.571
60	0.4264	109.365	109.4	7.1	1.147	0.432	1.579	3.65	1.005	0.573
61	0.4412	110.663	110.7	7.4	1.157	0.432	1.589	3.68	1.011	0.579
62	0.4560	110.847	110.8	7.6	1.156	0.432	1.588	3.68	1.010	0.578
63	0.4714	112.080	112.1	7.9	1.166	0.432	1.598	3.70	1.015	0.583
64	0.4862	112.752	112.8	8.1	1.169	0.432	1.601	3.71	1.017	0.585
65	0.5015	113.678	113.7	8.4	1.176	0.432	1.608	3.72	1.020	0.588
66	0.5163	114.027	114.0	8.6	1.176	0.432	1.608	3.72	1.020	0.588
67	0.5316	115.054	115.1	8.9	1.183	0.432	1.615	3.74	1.024	0.592
68	0.5464	114.795	114.8	9.1	1.178	0.432	1.610	3.73	1.021	0.589
69	0.5618	115.804	115.8	9.4	1.185	0.432	1.617	3.74	1.024	0.592
70	0.5766	116.098	116.1	9.6	1.184	0.432	1.616	3.74	1.024	0.592
71	0.5920	117.217	117.2	9.9	1.192	0.432	1.624	3.76	1.028	0.596
72	0.6067	117.139	117.1	10.1	1.188	0.432	1.620	3.75	1.026	0.594
73	0.6222	118.060	118.1	10.4	1.194	0.432	1.626	3.76	1.029	0.597
74	0.6369	118.271	118.3	10.6	1.193	0.432	1.625	3.76	1.029	0.597
75	0.6517	119.060	119.1	10.9	1.198	0.432	1.630	3.77	1.031	0.599
76	0.6672	119.344	119.3	11.1	1.197	0.432	1.629	3.77	1.031	0.599
77	0.6819	120.336	120.3	11.4	1.204	0.432	1.636	3.79	1.034	0.602
78	0.6974	120.345	120.3	11.6	1.200	0.432	1.632	3.78	1.032	0.600
79	0.7121	120.994	121.0	11.9	1.203	0.432	1.635	3.79	1.034	0.602
80	0.7275	121.099	121.1	12.1	1.201	0.432	1.633	3.78	1.032	0.600
81	0.7422	121.665	121.7	12.4	1.203	0.432	1.635	3.79	1.034	0.602
82	0.7576	121.415	121.4	12.6	1.197	0.432	1.629	3.77	1.031	0.599
83	0.7723	121.872	121.9	12.9	1.198	0.432	1.630	3.77	1.031	0.599
84	0.7878	122.051	122.1	13.1	1.197	0.432	1.629	3.77	1.030	0.598
85	0.8025	122.899	122.9	13.4	1.201	0.432	1.633	3.78	1.033	0.601
86	0.8179	122.544	122.5	13.6	1.194	0.432	1.626	3.76	1.029	0.597
87	0.8326	123.227	123.2	13.9	1.198	0.432	1.630	3.77	1.031	0.599
88	0.8480	123.091	123.1	14.1	1.193	0.432	1.625	3.76	1.028	0.596
89	0.8627	123.610	123.6	14.4	1.194	0.432	1.626	3.76	1.029	0.597
90	0.8781	123.825	123.8	14.6	1.193	0.432	1.625	3.76	1.028	0.596
91	0.8929	124.588	124.6	14.9	1.197	0.432	1.629	3.77	1.030	0.598
92	0.9083	124.407	124.4	15.1	1.191	0.432	1.623	3.76	1.028	0.596
93	0.9230	125.092	125.1	15.4	1.195	0.432	1.627	3.77	1.029	0.597

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
94	0.9313	124.921	124.9	15.5	1.191	0.432	1.623	3.76	1.027	0.595





Sample No.		1
Initial	Water Content, %	22.0
	Dry Density, pcf	107.0
	Saturation, %	97.5
	Void Ratio	0.6333
	Diameter, in.	2.84
	Height, in.	5.98
At Test	Water Content, %	24.9
	Dry Density, pcf	107.0
	Saturation, %	110.2
	Void Ratio	0.6333
	Diameter, in.	2.84
	Height, in.	5.98
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		0.79
Fail. Stress, tsf		1.13
Ult. Stress, tsf		
σ_1 Failure, tsf		1.92
σ_3 Failure, tsf		0.79

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown and gray FAT CLAY

LL= 50 **PL=** 20 **PI=** 30

Assumed Specific Gravity= 2.80

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 2.00
Failure type: 60 degree

Client: United States Army Corps of Engineers

Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079

Source of Sample: 08-94 **Depth:** 10-12

Sample Number: 6

Proj. No.: 08.18.921 **Date Sampled:** 8/15/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

8/19/2008
2:02 PM

Date: 8/15/08
Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921
Location: 08-94
Depth: 10-12 **Sample Number:** 6
Description: Reddish-brown and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 2.00
Failure type: 60 degree
Type of Sample: Undisturbed
Assumed Specific Gravity=2.80 **LL=**50 **PL=**20 **PI=**30
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	151.340	110.330
Moisture content: Dry soil+tare, gms.	129.720	94.510
Moisture content: Tare, gms.	31.660	31.020
Moisture, %	22.0	24.9
Moist specimen weight, gms.	1298.8	
Diameter, in.	2.84	
Area, in.^{2}	6.33	
Height, in.	5.98	
Wet Density, pcf	130.6	
Dry density, pcf	107.0	
Void ratio	0.6333	
Saturation, %	97.5	

Test Readings for Specimen No. 1

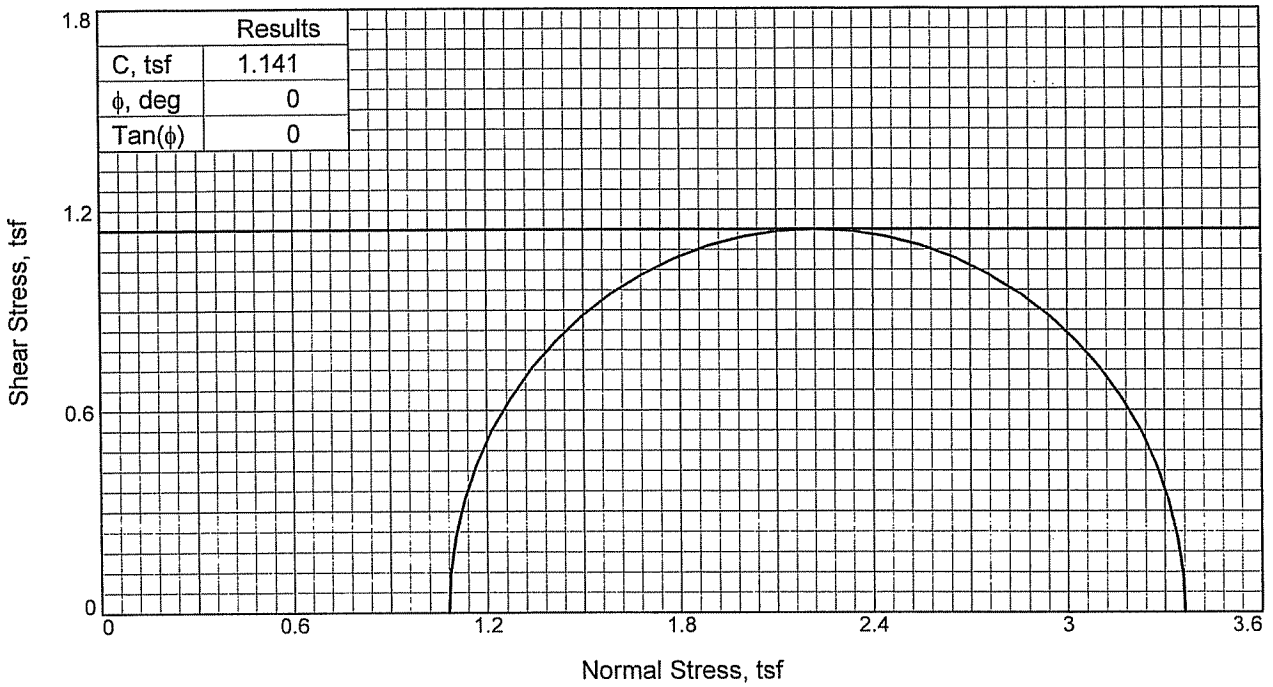
Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 11.00 psi (0.792 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 1.133 tsf **at reading no.** 71

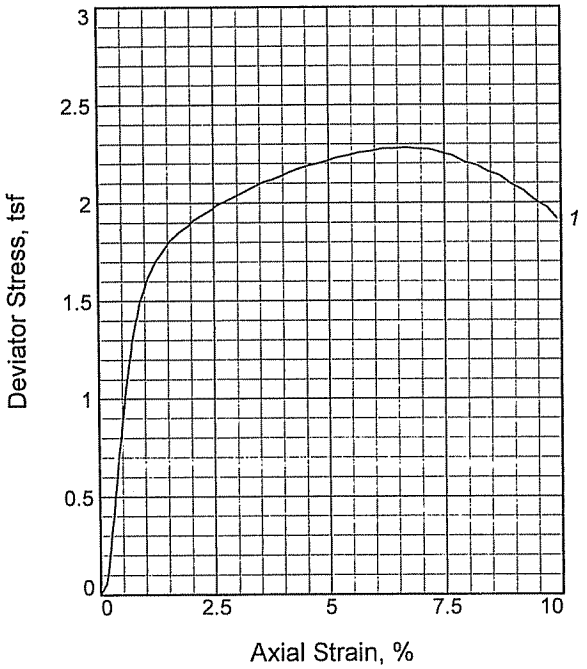
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0507	0.000	0.0	0.0	0.000	0.792	0.792	1.00	0.792	0.000
1	0.0573	4.936	4.9	0.1	0.056	0.792	0.848	1.07	0.820	0.028
2	0.0588	6.468	6.5	0.1	0.073	0.792	0.865	1.09	0.829	0.037
3	0.0633	7.828	7.8	0.2	0.089	0.792	0.881	1.11	0.836	0.044
4	0.0652	9.184	9.2	0.2	0.104	0.792	0.896	1.13	0.844	0.052
5	0.0665	10.482	10.5	0.3	0.119	0.792	0.911	1.15	0.851	0.059
6	0.0697	12.656	12.7	0.3	0.143	0.792	0.935	1.18	0.864	0.072
7	0.0716	14.141	14.1	0.3	0.160	0.792	0.952	1.20	0.872	0.080
8	0.0748	16.524	16.5	0.4	0.187	0.792	0.979	1.24	0.886	0.094
9	0.0780	18.673	18.7	0.5	0.211	0.792	1.003	1.27	0.898	0.106
10	0.0812	20.536	20.5	0.5	0.232	0.792	1.024	1.29	0.908	0.116
11	0.0844	22.604	22.6	0.6	0.255	0.792	1.047	1.32	0.920	0.128
12	0.0876	24.444	24.4	0.6	0.276	0.792	1.068	1.35	0.930	0.138
13	0.0901	25.877	25.9	0.7	0.292	0.792	1.084	1.37	0.938	0.146
14	0.0935	27.623	27.6	0.7	0.312	0.792	1.104	1.39	0.948	0.156
15	0.0968	29.100	29.1	0.8	0.328	0.792	1.120	1.41	0.956	0.164
16	0.1013	31.238	31.2	0.8	0.352	0.792	1.144	1.44	0.968	0.176
17	0.1039	32.475	32.5	0.9	0.366	0.792	1.158	1.46	0.975	0.183
18	0.1085	34.177	34.2	1.0	0.385	0.792	1.177	1.49	0.984	0.192
19	0.1131	35.975	36.0	1.0	0.405	0.792	1.197	1.51	0.994	0.202
20	0.1177	37.195	37.2	1.1	0.418	0.792	1.210	1.53	1.001	0.209
21	0.1254	39.988	40.0	1.2	0.449	0.792	1.241	1.57	1.016	0.224
22	0.1318	41.717	41.7	1.4	0.468	0.792	1.260	1.59	1.026	0.234
23	0.1376	43.160	43.2	1.5	0.483	0.792	1.275	1.61	1.034	0.242
24	0.1440	45.017	45.0	1.6	0.504	0.792	1.296	1.64	1.044	0.252
25	0.1555	47.329	47.3	1.8	0.529	0.792	1.321	1.67	1.056	0.264
26	0.1620	48.969	49.0	1.9	0.546	0.792	1.338	1.69	1.065	0.273
27	0.1678	50.180	50.2	2.0	0.559	0.792	1.351	1.71	1.072	0.280
28	0.1742	51.857	51.9	2.1	0.577	0.792	1.369	1.73	1.081	0.289
29	0.1863	54.142	54.1	2.3	0.601	0.792	1.393	1.76	1.093	0.301
30	0.1921	55.583	55.6	2.4	0.617	0.792	1.409	1.78	1.100	0.308
31	0.1985	56.786	56.8	2.5	0.629	0.792	1.421	1.79	1.107	0.315
32	0.2042	58.674	58.7	2.6	0.650	0.792	1.442	1.82	1.117	0.325
33	0.2165	60.660	60.7	2.8	0.670	0.792	1.462	1.85	1.127	0.335
34	0.2222	62.208	62.2	2.9	0.687	0.792	1.479	1.87	1.135	0.343
35	0.2345	64.451	64.5	3.1	0.710	0.792	1.502	1.90	1.147	0.355
36	0.2403	65.802	65.8	3.2	0.724	0.792	1.516	1.91	1.154	0.362
37	0.2526	68.381	68.4	3.4	0.751	0.792	1.543	1.95	1.167	0.375
38	0.2647	69.983	70.0	3.6	0.767	0.792	1.559	1.97	1.175	0.383
39	0.2705	71.484	71.5	3.7	0.783	0.792	1.575	1.99	1.183	0.391
40	0.2826	73.656	73.7	3.9	0.805	0.792	1.597	2.02	1.194	0.402
41	0.2948	75.643	75.6	4.1	0.825	0.792	1.617	2.04	1.204	0.412
42	0.3071	77.569	77.6	4.3	0.844	0.792	1.636	2.07	1.214	0.422
43	0.3128	78.985	79.0	4.4	0.858	0.792	1.650	2.08	1.221	0.429
44	0.3251	80.271	80.3	4.6	0.870	0.792	1.662	2.10	1.227	0.435
45	0.3372	81.670	81.7	4.8	0.884	0.792	1.676	2.12	1.234	0.442
46	0.3494	83.003	83.0	5.0	0.896	0.792	1.688	2.13	1.240	0.448

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.3609	85.021	85.0	5.2	0.916	0.792	1.708	2.16	1.250	0.458
48	0.3763	86.531	86.5	5.4	0.930	0.792	1.722	2.17	1.257	0.465
49	0.3911	89.070	89.1	5.7	0.955	0.792	1.747	2.21	1.269	0.477
50	0.4064	90.422	90.4	5.9	0.967	0.792	1.759	2.22	1.275	0.483
51	0.4212	92.230	92.2	6.2	0.983	0.792	1.775	2.24	1.284	0.492
52	0.4365	93.786	93.8	6.5	0.997	0.792	1.789	2.26	1.291	0.499
53	0.4512	95.449	95.4	6.7	1.012	0.792	1.804	2.28	1.298	0.506
54	0.4665	96.867	96.9	7.0	1.024	0.792	1.816	2.29	1.304	0.512
55	0.4812	98.393	98.4	7.2	1.038	0.792	1.830	2.31	1.311	0.519
56	0.4966	99.305	99.3	7.5	1.045	0.792	1.837	2.32	1.314	0.522
57	0.5113	101.066	101.1	7.7	1.060	0.792	1.852	2.34	1.322	0.530
58	0.5260	101.880	101.9	7.9	1.066	0.792	1.858	2.35	1.325	0.533
59	0.5415	103.303	103.3	8.2	1.078	0.792	1.870	2.36	1.331	0.539
60	0.5562	103.777	103.8	8.5	1.080	0.792	1.872	2.36	1.332	0.540
61	0.5715	105.342	105.3	8.7	1.093	0.792	1.885	2.38	1.339	0.547
62	0.5863	105.702	105.7	9.0	1.094	0.792	1.886	2.38	1.339	0.547
63	0.6010	106.789	106.8	9.2	1.102	0.792	1.894	2.39	1.343	0.551
64	0.6165	107.032	107.0	9.5	1.101	0.792	1.893	2.39	1.343	0.551
65	0.6312	108.401	108.4	9.7	1.112	0.792	1.904	2.40	1.348	0.556
66	0.6465	108.816	108.8	10.0	1.114	0.792	1.906	2.41	1.349	0.557
67	0.6612	109.699	109.7	10.2	1.120	0.792	1.912	2.41	1.352	0.560
68	0.6765	110.084	110.1	10.5	1.120	0.792	1.912	2.41	1.352	0.560
69	0.6912	111.207	111.2	10.7	1.129	0.792	1.921	2.42	1.356	0.564
70	0.7066	111.264	111.3	11.0	1.126	0.792	1.918	2.42	1.355	0.563
71	0.7214	112.266	112.3	11.2	1.133	0.792	1.925	2.43	1.358	0.566
72	0.7367	112.128	112.1	11.5	1.128	0.792	1.920	2.42	1.356	0.564
73	0.7514	112.743	112.7	11.7	1.131	0.792	1.923	2.43	1.358	0.566
74	0.7662	112.703	112.7	12.0	1.128	0.792	1.920	2.42	1.356	0.564
75	0.7816	113.095	113.1	12.2	1.128	0.792	1.920	2.42	1.356	0.564
76	0.7964	112.459	112.5	12.5	1.119	0.792	1.911	2.41	1.351	0.559
77	0.8117	112.842	112.8	12.7	1.119	0.792	1.911	2.41	1.352	0.560
78	0.8265	112.660	112.7	13.0	1.114	0.792	1.906	2.41	1.349	0.557
79	0.8418	112.976	113.0	13.2	1.114	0.792	1.906	2.41	1.349	0.557
80	0.8565	113.152	113.2	13.5	1.113	0.792	1.905	2.41	1.348	0.556
81	0.8719	113.801	113.8	13.7	1.116	0.792	1.908	2.41	1.350	0.558
82	0.8866	113.441	113.4	14.0	1.109	0.792	1.901	2.40	1.347	0.555
83	0.9014	113.529	113.5	14.2	1.107	0.792	1.899	2.40	1.345	0.553
84	0.9169	113.199	113.2	14.5	1.100	0.792	1.892	2.39	1.342	0.550
85	0.9316	113.822	113.8	14.7	1.103	0.792	1.895	2.39	1.344	0.552
86	0.9469	113.042	113.0	15.0	1.092	0.792	1.884	2.38	1.338	0.546





Sample No.		1
Initial	Water Content, %	25.4
	Dry Density, pcf	98.4
	Saturation, %	96.3
	Void Ratio	0.7128
	Diameter, in.	2.85
	Height, in.	6.00
At Test	Water Content, %	26.6
	Dry Density, pcf	98.4
	Saturation, %	100.8
	Void Ratio	0.7128
	Diameter, in.	2.85
	Height, in.	6.00
Strain rate, %/min.		1.00
Back Pressure, tsf		0.00
Cell Pressure, tsf		1.08
Fail. Stress, tsf		2.28
Ult. Stress, tsf		
σ_1 Failure, tsf		3.36
σ_3 Failure, tsf		1.08

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Reddish-brown and gray FAT CLAY

LL= 67 **PL=** 21 **PI=** 46

Assumed Specific Gravity= 2.70

Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 3.00
Failure type: Slickensided

Client: United States Army Corps of Engineers

Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079

Source of Sample: 08-94 **Depth:** 16-18

Sample Number: 9

Proj. No.: 08.18.921 **Date Sampled:** 8/16/08

TRIAXIAL SHEAR TEST REPORT

Tolunay-Wong Engineers, Inc.

TRIAXIAL COMPRESSION TEST

Unconsolidated Undrained

8/19/2008
2:05 PM

Date: 8/16/08
Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921
Location: 08-94
Depth: 16-18 **Sample Number:** 9
Description: Reddish-brown and gray FAT CLAY
Remarks:
Test method: ASTM D 2850
Pocket pen; tsf: 3.00
Failure type: Slickensided
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**67 **PL=**21 **PI=**46
Test Method: ASTM D 2850

Parameters for Specimen No. 1

Specimen Parameter	Initial	Final
Moisture content: Moist soil+tare, gms.	151.540	109.280
Moisture content: Dry soil+tare, gms.	127.240	92.980
Moisture content: Tare, gms.	31.660	31.730
Moisture, %	25.4	26.6
Moist specimen weight, gms.	1240.2	
Diameter, in.	2.85	
Area, in.^{2}	6.38	
Height, in.	6.00	
Wet Density, pcf	123.4	
Dry density, pcf	98.4	
Void ratio	0.7128	
Saturation, %	96.3	

Test Readings for Specimen No. 1

Membrane modulus = .130 kN/cm^2
Membrane thickness = .031 cm
Cell pressure = 15.00 psi (1.080 tsf)
Back pressure = 0.00 psi (0.000 tsf)
Strain rate, %/min. = 1.00
Fail. Stress = 2.281 tsf **at reading no.** 63

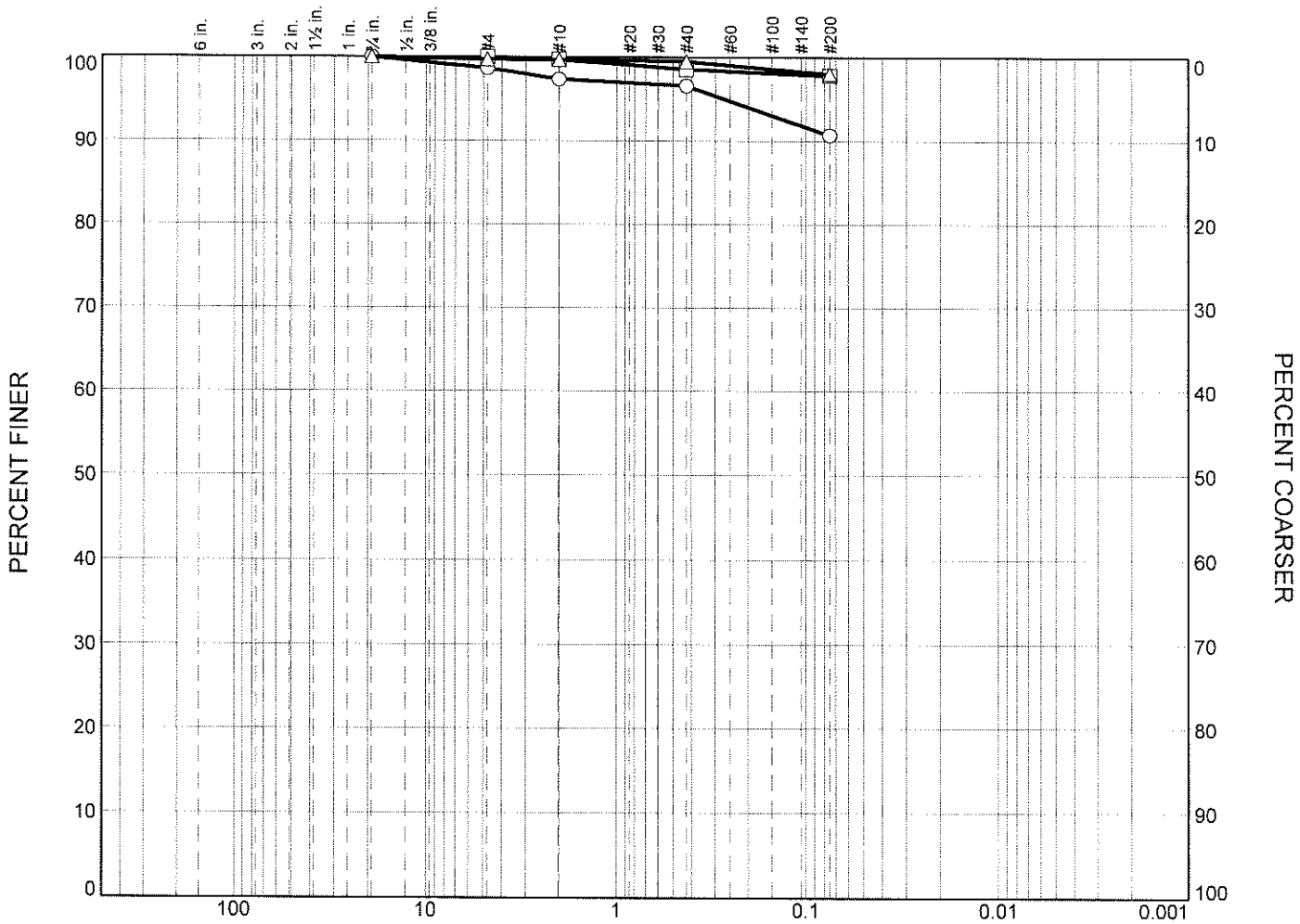
Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
0	0.0601	0.000	0.0	0.0	0.000	1.080	1.080	1.00	1.080	0.000
1	0.0675	4.501	4.5	0.1	0.051	1.080	1.131	1.05	1.105	0.025
2	0.0704	9.437	9.4	0.2	0.106	1.080	1.186	1.10	1.133	0.053
3	0.0717	14.060	14.1	0.2	0.158	1.080	1.238	1.15	1.159	0.079
4	0.0737	19.988	20.0	0.2	0.225	1.080	1.305	1.21	1.193	0.113
5	0.0750	25.029	25.0	0.2	0.282	1.080	1.362	1.26	1.221	0.141
6	0.0763	30.253	30.3	0.3	0.341	1.080	1.421	1.32	1.250	0.170
7	0.0783	34.697	34.7	0.3	0.390	1.080	1.470	1.36	1.275	0.195
8	0.0796	39.939	39.9	0.3	0.449	1.080	1.529	1.42	1.305	0.225
9	0.0809	45.567	45.6	0.3	0.513	1.080	1.593	1.47	1.336	0.256
10	0.0829	51.818	51.8	0.4	0.583	1.080	1.663	1.54	1.371	0.291
11	0.0842	57.900	57.9	0.4	0.651	1.080	1.731	1.60	1.405	0.325
12	0.0855	62.844	62.8	0.4	0.706	1.080	1.786	1.65	1.433	0.353
13	0.0875	67.933	67.9	0.5	0.763	1.080	1.843	1.71	1.462	0.382
14	0.0888	72.570	72.6	0.5	0.815	1.080	1.895	1.75	1.488	0.408
15	0.0901	77.558	77.6	0.5	0.871	1.080	1.951	1.81	1.515	0.435
16	0.0921	82.589	82.6	0.5	0.927	1.080	2.007	1.86	1.544	0.464
17	0.0934	88.383	88.4	0.6	0.992	1.080	2.072	1.92	1.576	0.496
18	0.0947	92.887	92.9	0.6	1.042	1.080	2.122	1.97	1.601	0.521
19	0.0967	97.230	97.2	0.6	1.091	1.080	2.171	2.01	1.625	0.545
20	0.0980	101.273	101.3	0.6	1.136	1.080	2.216	2.05	1.648	0.568
21	0.0993	104.841	104.8	0.7	1.176	1.080	2.256	2.09	1.668	0.588
22	0.1013	108.810	108.8	0.7	1.220	1.080	2.300	2.13	1.690	0.610
23	0.1026	112.873	112.9	0.7	1.265	1.080	2.345	2.17	1.712	0.632
24	0.1039	116.517	116.5	0.7	1.305	1.080	2.385	2.21	1.733	0.653
25	0.1059	119.516	119.5	0.8	1.339	1.080	2.419	2.24	1.749	0.669
26	0.1072	122.142	122.1	0.8	1.368	1.080	2.448	2.27	1.764	0.684
27	0.1085	124.600	124.6	0.8	1.395	1.080	2.475	2.29	1.777	0.697
28	0.1105	126.987	127.0	0.8	1.421	1.080	2.501	2.32	1.791	0.711
29	0.1118	129.983	130.0	0.9	1.454	1.080	2.534	2.35	1.807	0.727
30	0.1131	132.392	132.4	0.9	1.481	1.080	2.561	2.37	1.821	0.741
31	0.1164	136.036	136.0	0.9	1.521	1.080	2.601	2.41	1.840	0.760
32	0.1197	139.367	139.4	1.0	1.557	1.080	2.637	2.44	1.859	0.779
33	0.1223	142.862	142.9	1.0	1.596	1.080	2.676	2.48	1.878	0.798
34	0.1256	145.732	145.7	1.1	1.627	1.080	2.707	2.51	1.893	0.813
35	0.1347	152.616	152.6	1.2	1.701	1.080	2.781	2.58	1.931	0.851
36	0.1411	156.089	156.1	1.4	1.738	1.080	2.818	2.61	1.949	0.869
37	0.1469	159.102	159.1	1.4	1.770	1.080	2.850	2.64	1.965	0.885
38	0.1533	162.537	162.5	1.6	1.806	1.080	2.886	2.67	1.983	0.903
39	0.1655	166.827	166.8	1.8	1.850	1.080	2.930	2.71	2.005	0.925
40	0.1770	170.242	170.2	1.9	1.884	1.080	2.964	2.74	2.022	0.942
41	0.1835	172.805	172.8	2.1	1.910	1.080	2.990	2.77	2.035	0.955
42	0.1957	175.737	175.7	2.3	1.939	1.080	3.019	2.80	2.049	0.969
43	0.2073	178.473	178.5	2.5	1.965	1.080	3.045	2.82	2.062	0.982
44	0.2137	180.735	180.7	2.6	1.988	1.080	3.068	2.84	2.074	0.994
45	0.2253	183.048	183.0	2.8	2.009	1.080	3.089	2.86	2.085	1.005
46	0.2376	185.593	185.6	3.0	2.033	1.080	3.113	2.88	2.096	1.016

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress tsf	Minor Princ. Stress tsf	Major Princ. Stress tsf	1:3 Ratio	P tsf	Q tsf
47	0.2498	188.119	188.1	3.2	2.056	1.080	3.136	2.90	2.108	1.028
48	0.2621	190.739	190.7	3.4	2.080	1.080	3.160	2.93	2.120	1.040
49	0.2743	193.424	193.4	3.6	2.105	1.080	3.185	2.95	2.133	1.053
50	0.2865	195.090	195.1	3.8	2.119	1.080	3.199	2.96	2.139	1.059
51	0.2980	197.081	197.1	4.0	2.136	1.080	3.216	2.98	2.148	1.068
52	0.3103	199.551	199.6	4.2	2.158	1.080	3.238	3.00	2.159	1.079
53	0.3226	201.543	201.5	4.4	2.175	1.080	3.255	3.01	2.168	1.088
54	0.3342	203.456	203.5	4.6	2.191	1.080	3.271	3.03	2.176	1.096
55	0.3465	204.812	204.8	4.8	2.201	1.080	3.281	3.04	2.181	1.101
56	0.3588	206.374	206.4	5.0	2.213	1.080	3.293	3.05	2.187	1.107
57	0.3704	208.321	208.3	5.2	2.230	1.080	3.310	3.06	2.195	1.115
58	0.3859	210.018	210.0	5.4	2.242	1.080	3.322	3.08	2.201	1.121
59	0.4007	211.954	212.0	5.7	2.256	1.080	3.336	3.09	2.208	1.128
60	0.4161	213.152	213.2	5.9	2.263	1.080	3.343	3.10	2.211	1.131
61	0.4308	215.030	215.0	6.2	2.277	1.080	3.357	3.11	2.218	1.138
62	0.4462	215.608	215.6	6.4	2.277	1.080	3.357	3.11	2.218	1.138
63	0.4610	216.618	216.6	6.7	2.281	1.080	3.361	3.11	2.221	1.141
64	0.4764	216.631	216.6	6.9	2.275	1.080	3.355	3.11	2.218	1.138
65	0.4912	216.951	217.0	7.2	2.273	1.080	3.353	3.10	2.216	1.136
66	0.5066	215.894	215.9	7.4	2.255	1.080	3.335	3.09	2.208	1.128
67	0.5214	215.024	215.0	7.7	2.240	1.080	3.320	3.07	2.200	1.120
68	0.5361	212.468	212.5	7.9	2.208	1.080	3.288	3.04	2.184	1.104
69	0.5517	211.360	211.4	8.2	2.190	1.080	3.270	3.03	2.175	1.095
70	0.5665	209.053	209.1	8.4	2.160	1.080	3.240	3.00	2.160	1.080
71	0.5813	207.435	207.4	8.7	2.138	1.080	3.218	2.98	2.149	1.069
72	0.5968	203.702	203.7	8.9	2.093	1.080	3.173	2.94	2.127	1.047
73	0.6115	201.377	201.4	9.2	2.064	1.080	3.144	2.91	2.112	1.032
74	0.6269	196.959	197.0	9.4	2.013	1.080	3.093	2.86	2.086	1.006
75	0.6417	194.042	194.0	9.7	1.978	1.080	3.058	2.83	2.069	0.989
76	0.6545	188.765	188.8	9.9	1.919	1.080	2.999	2.78	2.040	0.960

Particle Size Analysis - ASTM D 422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.3	1.3	0.8	5.9	90.7	
□	0.0	0.0	0.0	0.3	1.1	0.8	97.8	
△	0.0	0.0	0.3	0.0	0.2	1.5	98.0	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	08-94	3	4-6	Tan and gray FAT CLAY	CH
□	08-94	6	10-12	Reddish-brown and gray FAT CLAY	CH
△	08-94	9	16-18	Reddish-brown and gray FAT CLAY	CH

Tolunay-Wong Engineers, Inc.
Houston, Texas

Client: United States Army Corps of Engineers
Project: Chocolate Bayou Placement Area
Contract DACW64-03-D-0008; Task Order 0079
Project No.: 08.18.921